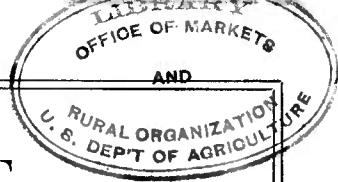


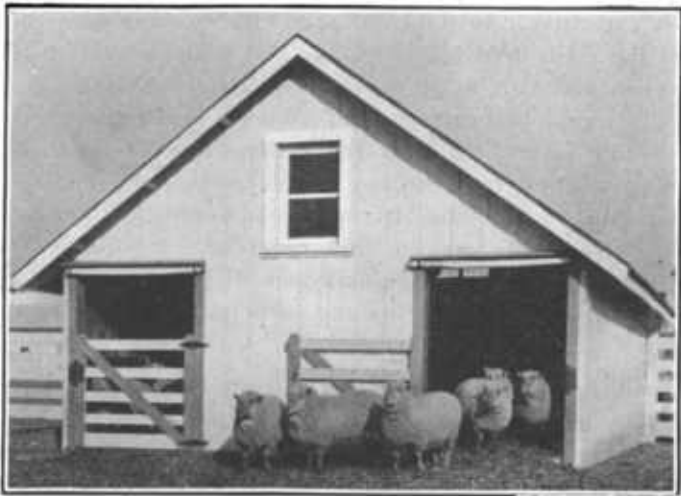
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EQUIPMENT FOR FARM SHEEP RAISING

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FARMERS' BULLETIN 810
UNITED STATES DEPARTMENT OF AGRICULTURE

Contribution from the Bureau of Animal Industry
A. D. MELVIN, Chief

Washington, D. C.

June, 1917

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EQUIPMENT for raising sheep on farms need not be expensive. In mild latitudes little housing is needed, and the main need is for fencing and pastures of sufficient number and size to allow frequent changing of flocks to fresh ground to insure health. Where winters are longer and more severe, buildings and sheds are necessary to furnish protection from storms, though no special provisions are needed for warmth. Dryness, good ventilation, and freedom from drafts are the first requisites of buildings for sheep. Convenience in feeding and shepherding must also be held in mind in locating and planning such buildings or sheds.

Small flocks can be cared for in sections of barns having stabling or feed storage for other stock, but with a flock of, say, 100 ewes separate buildings are desirable. The interior arrangement of these buildings should be such as to require a minimum of labor and the least possible moving of the ewes in doing the feeding and caring for them during the lambing season. A building of this type can also be utilized for fattening purchased lambs to be disposed of before lambing begins in the regular farm flock. A good supply of feed racks, grain troughs, etc., can be provided at small expense and will save labor and prevent waste of feed.

EQUIPMENT FOR FARM SHEEP RAISING.¹

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DRAWINGS AND BILLS OF MATERIALS.

The object of this publication is to furnish a practical guide for the equipping of farms for sheep raising. Wide differences in climatic conditions render it impracticable to suggest a particular type of building for all sections; therefore a number of

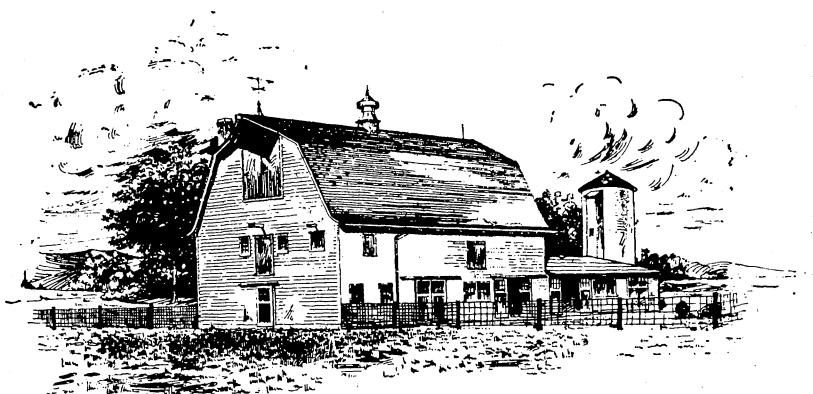


FIG. 1.—Barn for the exclusive use of sheep. In requesting plans and bill of material for this building, mention subject No. 685, serial Nos. 567, 568, and 569.

types of barns and sheds are presented. In many cases it will be found satisfactory to construct buildings as shown in the plans. Where this is not advisable the essential features of arrangement can be adopted with such alterations in detail as are rendered necessary by climatic or other fixed features.

¹The author is indebted to Mr. Wallace Ashby of the Office of Public Roads and Rural Engineering for assistance in the design and preparation of drawings and descriptions of the buildings shown in figures 1 to 11.

The estimated cost of buildings given in the discussions of the sets of plans is based upon average prices for material and labor in May, 1916. Elaborate and expensive structures are not advocated for use in handling sheep. Buildings of this character do not insure economy in management and are not essential to the welfare of the flock.

In deciding upon the amount of equipment other than buildings no set rules can be followed. Peculiarities of individual farms

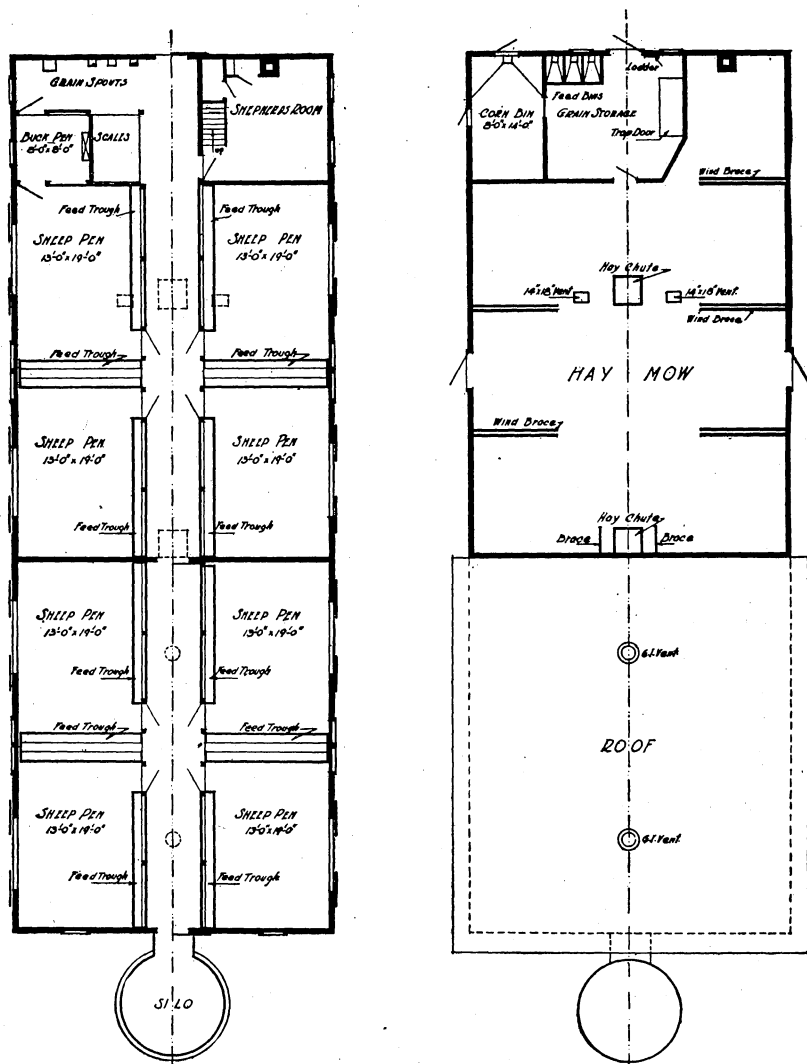


FIG. 2.—First and second floor plans of barn shown in figure 1.

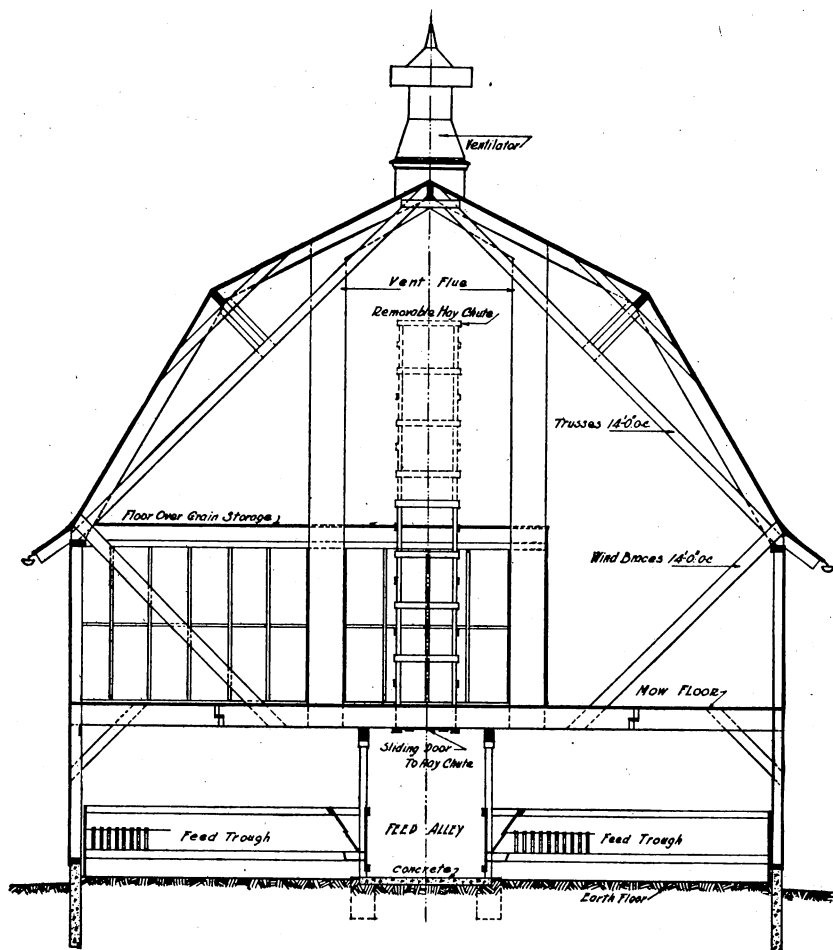


FIG. 3.—Cross section of main part of barn shown in figure 2.

and variations in systems of rearing determine what can be used to the best advantage. The assortment of minor equipment shown is designed to include the range of such material that will permit a selection of what is needed in any particular case.

Working drawings and bills of materials for the buildings shown in this bulletin may be obtained without charge, by those who intend to build, from the Office of Public Roads and Rural Engineering, Department of Agriculture, Washington, D. C. While prints of the drawings will be furnished as long as they are available for free distribution, it is expected that only persons who are interested to the point of building will apply for them.

IMPORTANT FEATURES OF BUILDINGS FOR SHEEP.

LOCATION.

The site for permanent buildings for sheep should first of all be dry and well drained. Ample yard space that is dry and sheltered should be available adjacent to the main barn or shed. A southern slope with sandy soil is especially satisfactory for this purpose.

On most farms it will be advantageous to have the buildings and yards easily reached from the regular pastures or from fields used

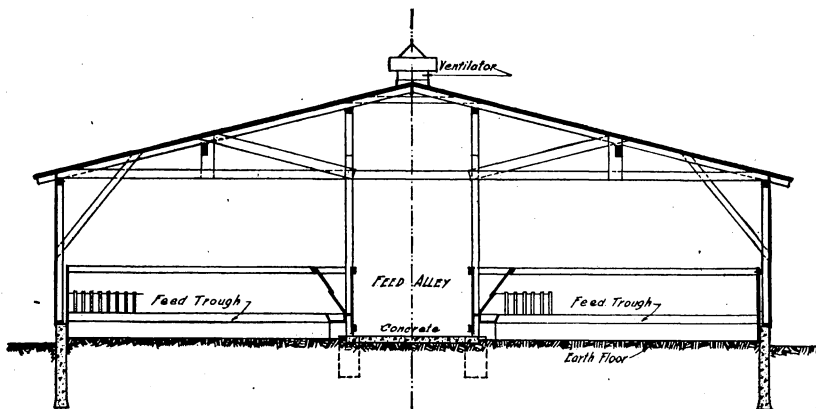


FIG. 4.—Cross section of shed part of barn shown in figure 2.

to grow forage crops for summer pasture. As the flock requires attention many times daily during part of the year, convenience of location in relation to the farm dwelling and to other buildings will effect an economy of time in the performance of routine labor.

WARMTH, DRYNESS, AND LIGHT.

Since sheep do not require quarters that are especially warm, a single wall will ordinarily insure sufficient warmth. If lambs are dropped in very cold weather, a temporary covering over the lambing panels described later will answer the purpose, or a small space can be partitioned off in which to keep a few ewes until their lambs become strong.

Shade and protection from heat are peculiarly necessary for sheep. Shade can not always be furnished in pastures, and buildings that are well located and constructed so as to render them cool in summer will often provide greater comfort to the sheep during hot days than would be possible for them out of doors.

Dryness and freedom from draft are most important. Sheep can not possibly thrive in quarters that are damp or dark. In fact, the flock should be shut in only during storms. Abundance of light

in all parts of the building and at all times is necessary not only for the health of the sheep but for convenience of the shepherd in caring for them. One square foot of window for each 20 square feet of floor space is necessary. Windows should be placed at a height to insure a good distribution of light, and particularly direct sunlight for the lambing pens during the period the ewes are lambing.¹

VENTILATION.

Close confinement in poorly ventilated pens is very injurious to breeding ewes. While they should seldom be shut indoors, a part of the flock will usually lie inside at night. At lambing and during storms doors should be closed. For such times it is necessary to provide means of securing fresh air without creating drafts. In a very large building with numerous doors and windows it is often advisable to build one or two partitions from floor to ceiling to prevent drafts. Fresh air can be admitted through muslin-screened windows opened on the side opposite to that from which the wind is blowing without causing drafts if all other sides of the building are tightly closed.

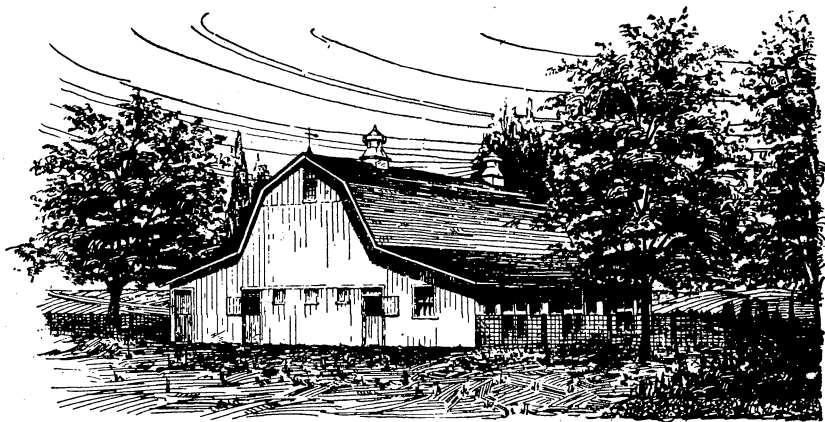


FIG. 5.—Combination horse, cattle, and sheep barn. In requesting plans and specifications for this building, mention subject No. 685-A3, serial Nos. 612 and 613.

In very cold sections, or where lambs are to arrive in the winter months, specially arranged outlets for foul air and inlets for fresh air will be necessary. Foul-air flues should extend from the ceiling with as few bends as possible to the roof. They should be of sufficient size and number to give 8 to 10 square inches for each sheep in the building. Fresh air may be admitted through arranged

¹ Farmers' Bulletin 438, "Hog Houses," contains directions for the placing of windows to secure the maximum of sunlight at any season and in any latitude.

inlets near the floor line. Some attention is required to adjust such inlets to the variations in wind and temperature, and the same is true where windows are depended upon. There is no efficient automatic system of ventilating sheep buildings.

FLOORS.

Level and well-drained clay-surfaced floors are satisfactory and economical. Sheep pack the surface very firmly, and if there is proper drainage the only objection to this floor is that it does not exclude rats. Concrete floors for alleys and feed rooms are necessary, but will seldom be called for in the pens.

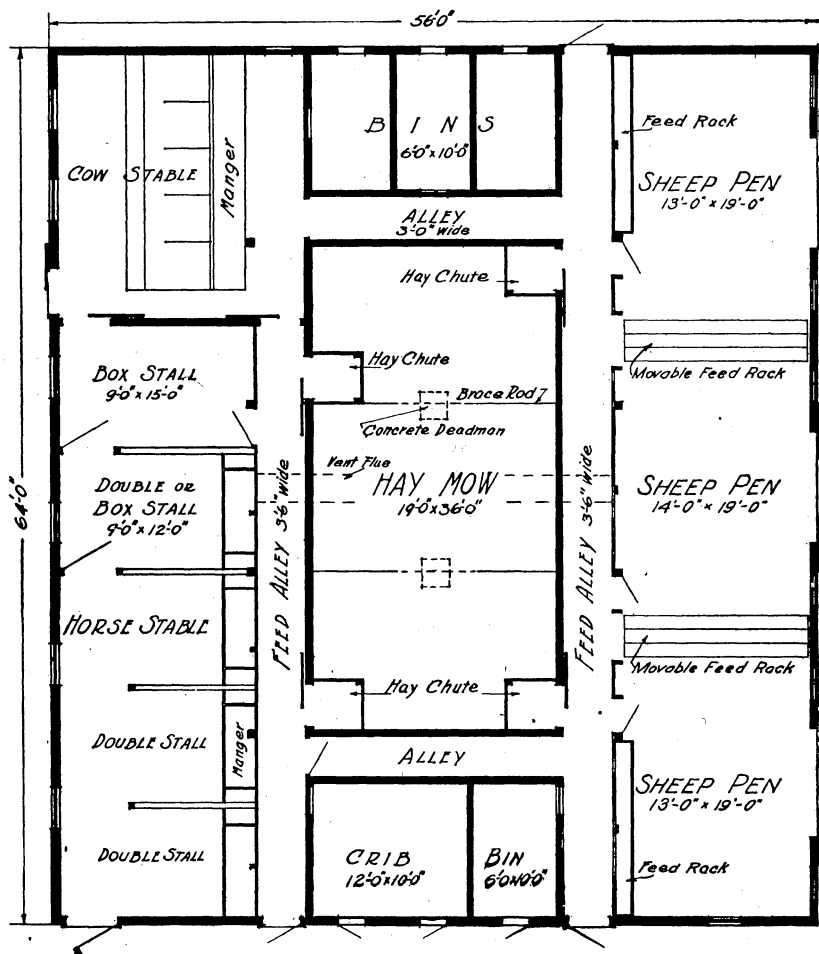


FIG. 6.—Floor plan of barn shown in figure 5.

ARRANGEMENT OF BUILDING.

The main features to be provided in the floor plan are minimum of waste space, convenience and ease in feeding and in cleaning the pens, and elimination of the need of moving or disturbing the sheep. Pen partitions should be movable. By using feed racks to make divisions in the pen space the size of the pens can be varied as needed,

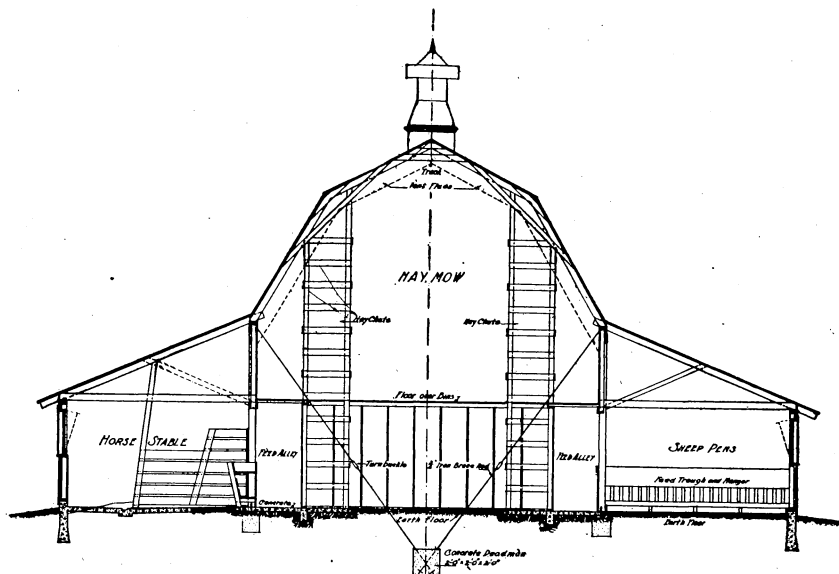


FIG. 7.—Cross section of barn shown in figure 5.

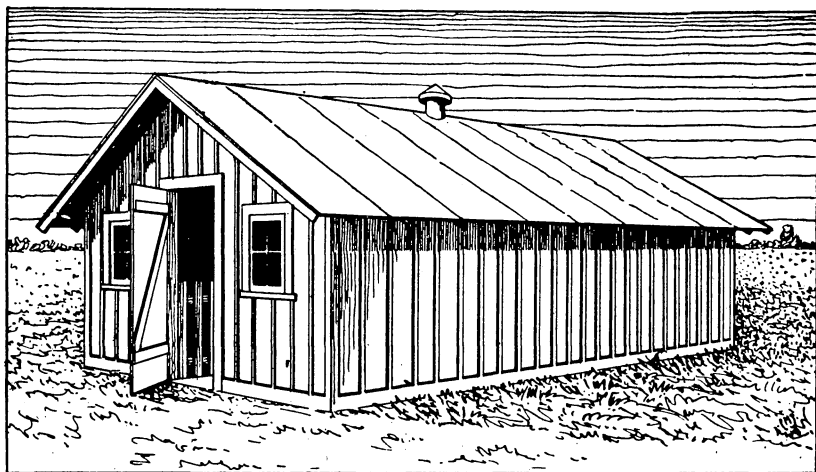


FIG. 8.—A closed sheep shed. In requesting building plans and specifications, mention 685-B2, serial 566.

and in special cases the racks can be removed to permit the use of the space for other stock.

A BARN FOR THE EXCLUSIVE USE OF SHEEP.

In figures 1, 2, 3, and 4 are shown a perspective view, floor plans, and cross sections of a building for the exclusive use of sheep, which

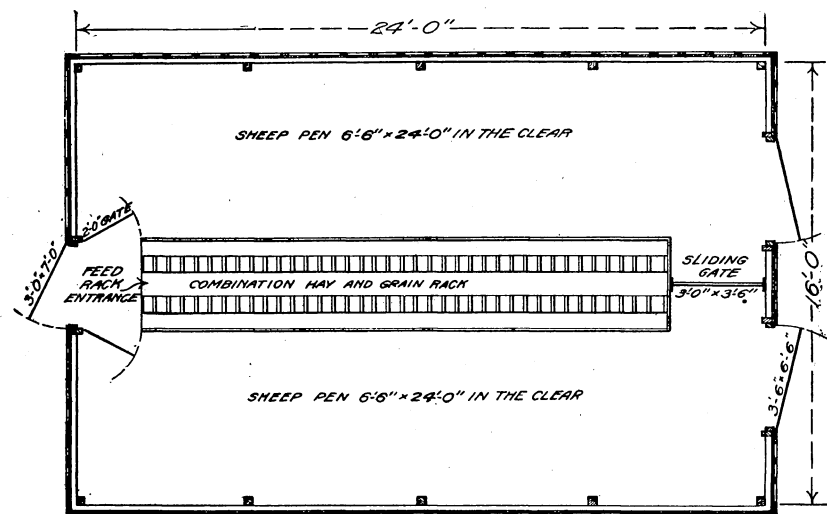


FIG. 9.—Floor plan of shed shown in figure 8.

is designed to meet the needs of those permanently engaged in sheep raising on a large scale. The eight large pens will each hold 20 ewes, allowing 12 square feet of floor space and 15 inches of rack

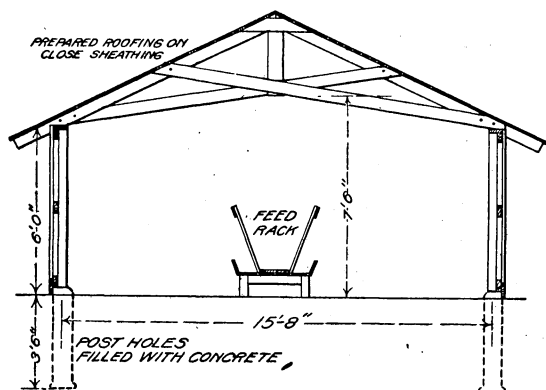


FIG. 10.—Cross section of shed shown in figure 8.

space per ewe, and the small pen at the north end will accommodate 4 or 5 bucks. The partitions between the pens are formed by movable feed racks of the type shown in figures 15 and 16, so arranged

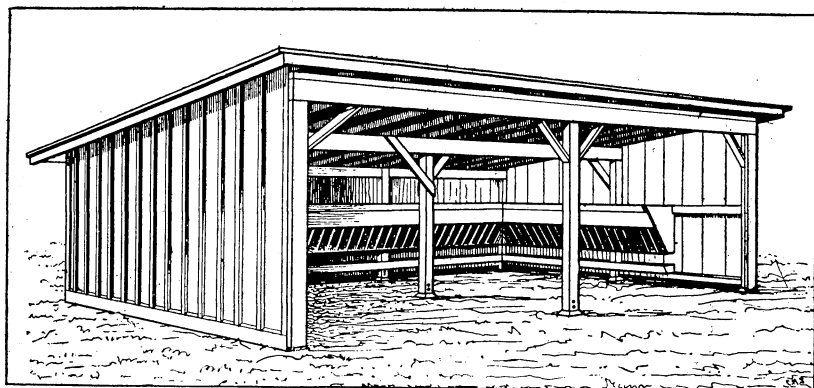


FIG. 11.—An open sheep shed. In requesting plans and specifications for this shed, mention subject 685-B2, serial 565.

that the attendant can walk down the center to distribute feed; and those next the alley are formed by wall racks such as are shown in figures 18 and 19. An advantage would be gained by having the movable racks which form the fronts of the pens made in 10-foot lengths, with a light 3-foot door hung on one end. This arrangement will allow wider latitude in the use of the double cross racks for dividing the pen space; it would permit the forming of pens 10, 20, or 30 feet in width. The door upon the end of the alley rack

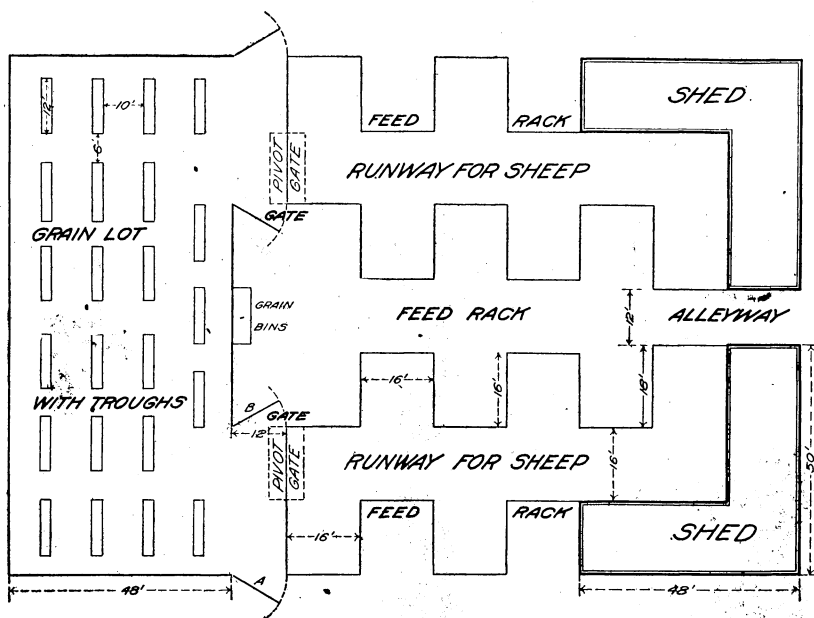


FIG. 12.—Plan of a feed lot for finishing lambs for market.

would always be where it was needed to fasten to the cross rack and close the pen.

This barn provides storage space for 55 tons of loose hay or straw in the mow and 1,100 bushels of grain in the storage room on the second floor. This is enough feed, except silage, to carry all the sheep that should be put into the barn, for a period of five months. The silo should have a capacity of 30 tons. Arrangements are made for filling the mow by horse fork and carrier, and for hoisting feed in bags with a block and tackle. Hay is thrown down through two chutes, each fitted with a sliding door at the bottom, and grain is delivered to the first floor through four spouts, each of which may carry a different mixture. The railing around the

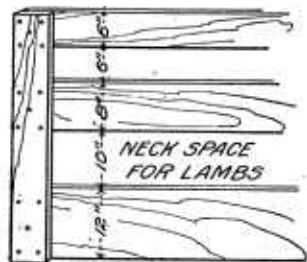


FIG. 13.—Section of a panel that may be used for fencing a lot and as a feed rack for sheep.

platform scale near the feed spouts should have gates arranged so that either sheep or feed may be weighed.

During the lambing season, which seldom lasts over six weeks, the detachable lambing pens, illustrated in figure 25, may be used. These have a great advantage over permanent lambing pens, since they can be folded up and put away when not in use.

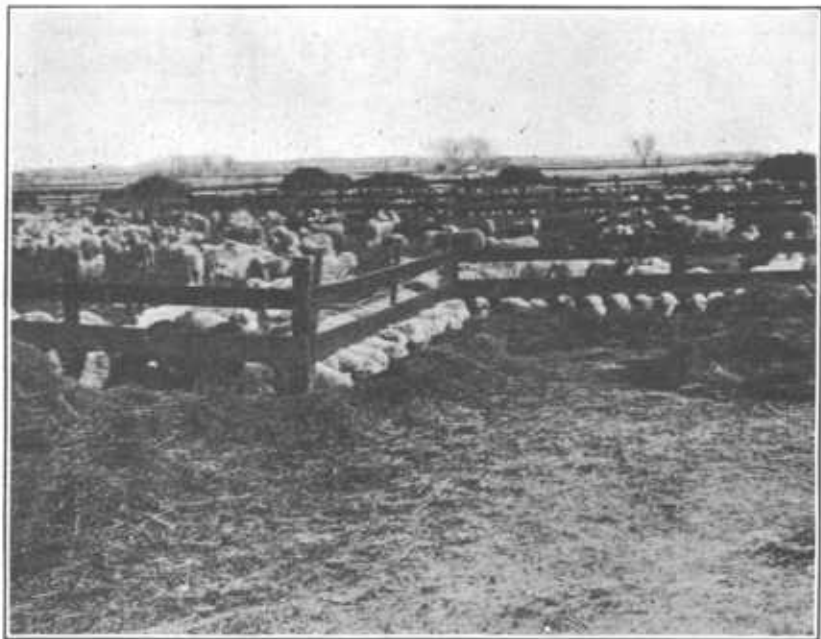


FIG. 14.—Illustrating the use of panel shown in figure 13.

The shepherd's room is equipped with a stove and medicine closet and may be used as a hospital for chilled lambs. With a room of this kind at the disposal of the shepherd, this barn may be considered as having all of the essentials for successful winter lambing.

With a larger silo, a supply of roughage stored outside the barn with which to refill the mow late in the fall, and a few extra feed racks set up in the lots, this barn could be used for feeding out two carloads of lambs in early winter before being needed for the breeding ewes.

The estimated cost of the barn proper, without feed racks, is \$2,400. These figures are given only as a guide, however, as the actual cost may vary considerably from this amount, according to local prices

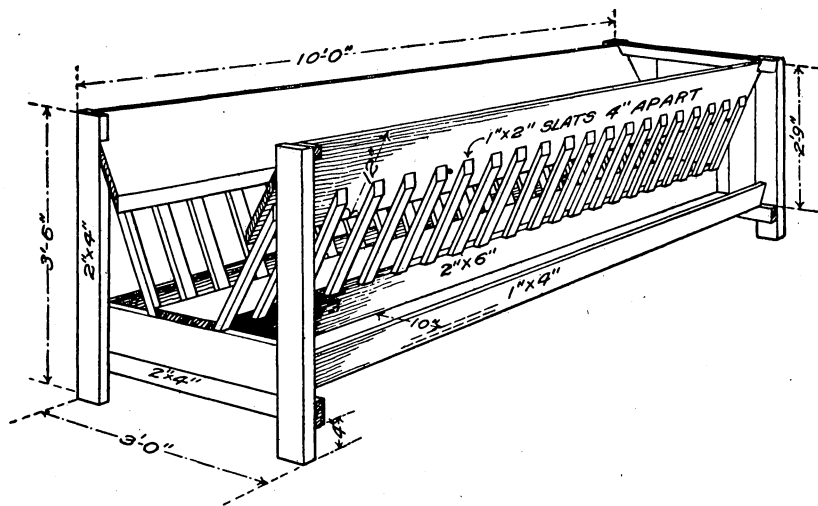


FIG. 15.—A combination hay and grain rack which may be entered by attendant when feeding grain.

of material and labor and the amount of farm labor that is used. The estimated cost of a 9 by 26 foot concrete silo of 30-ton capacity is \$150, and for each additional ton \$3.10 extra (Farmers' Bulletin 589).

A COMBINATION HORSE, CATTLE, AND SHEEP BARN.

Figures 5, 6, and 7 show a perspective view, floor plan, and cross section of a general barn intended for farms where all live stock is kept in a single building. This barn will accommodate 10 horses, 5 cows, and 63 sheep. In order that no kind of stock may be disturbed by the presence of another, and to prevent drafts through the building, the quarters for the horses, cows, and sheep are partitioned off, as shown by the heavy lines on the plan and cross section. The cow stable is ceiled on the inside of the studs to make it warmer and

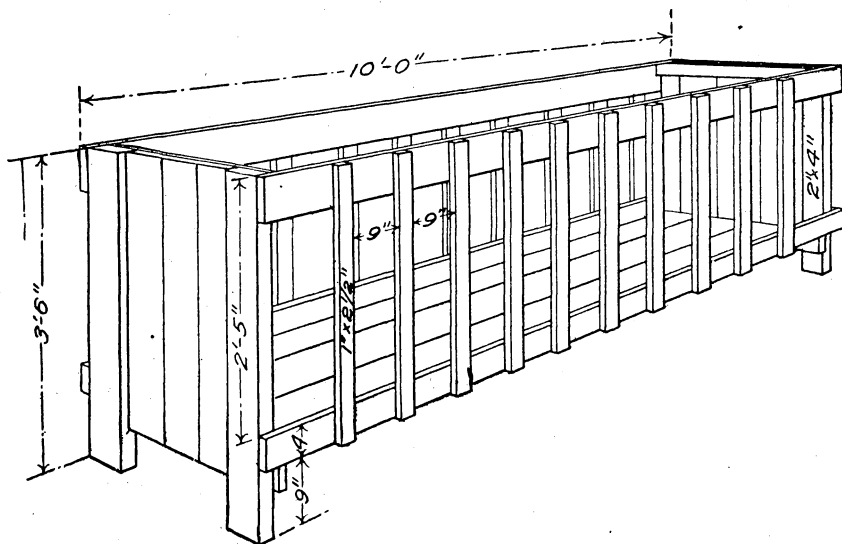


FIG. 16.—Combination hay and grain rack with bottom for feeding both roughage and grain.

to provide a smooth surface which will not collect dust, but the rest of the barn has a single wall.

The equipment for the sheep pens is the same as that discussed for the barn illustrated in figures 1 to 4, and similar doors, windows, and ventilation system are used. More window area per square foot of pen space is provided in this barn than in the other, because the par-

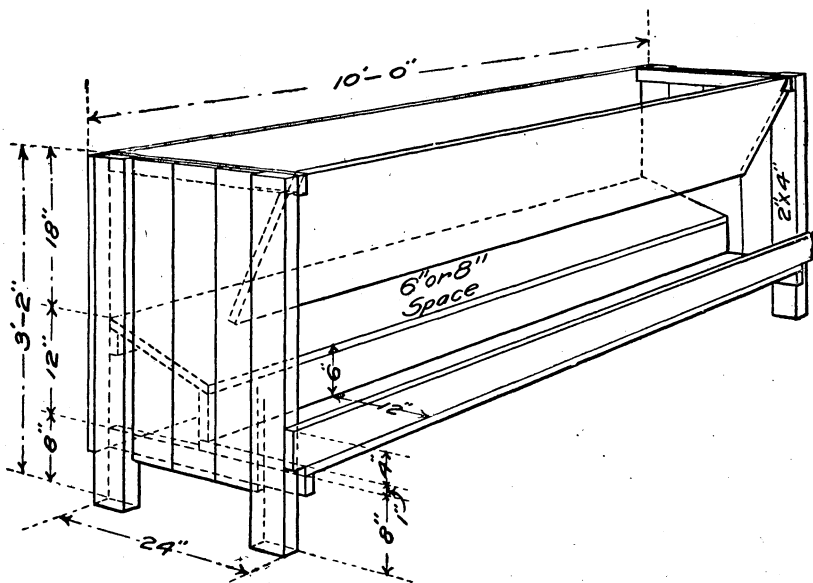


FIG. 17.—Combination hay and grain rack with solid front to keep feeding materials out of fleece.

titions prevent light from passing from one side of the building to the other, and the low eaves shade the windows part of the day. The hay mow, which has a capacity of 50 tons and is filled by a horse fork and carrier, occupies the entire central part of the building from the ground to the roof and also the space above the alleys and grain bins. It is reached through four hay chutes, placed to make feeding easy. The total capacity of the grain bins is 2,000 bushels, so that the barn has feed capacity enough to carry the stock on full feed for five months.

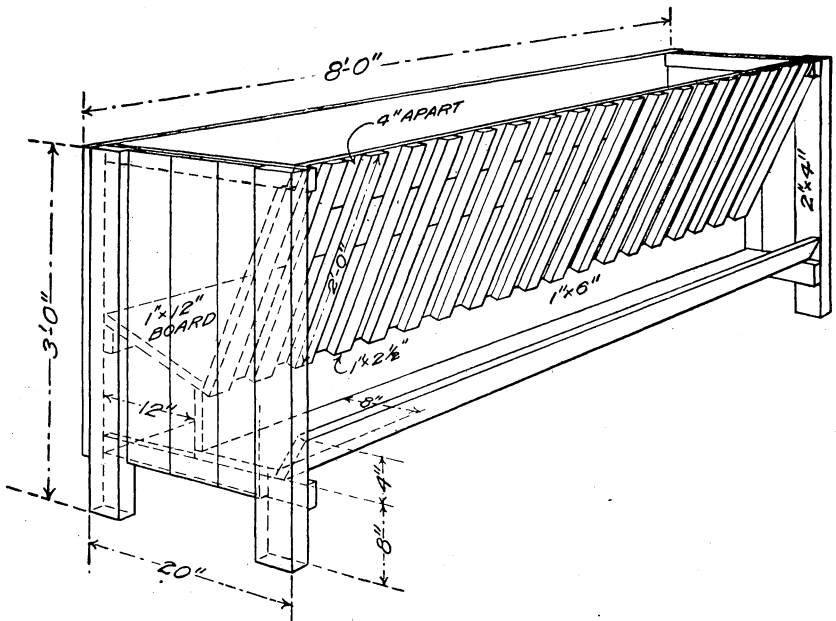


FIG. 18.—A stationary or wall hay and grain rack.

The estimated cost of this barn complete is \$2,125, but this amount is intended only as a guide, the actual cost varying with local prices of material and labor and the amount of farm labor that is used.

A CLOSED SHEEP SHED.

Figures 8, 9, and 10 show a simple type of closed sheep shed which is especially adapted for farms on which the main barn has large feed capacity but not sufficient floor space for the live stock. Allowing 12 square feet of floor space per animal, this shed will hold 26 sheep, which gives a space at the rack of almost 17 inches each. One of the racks shown in figures 15 and 16 should be used in this shed, and the feeding should be done entirely from the walkway in the center so as to avoid disturbing the sheep. The large door at the end of the rack is intended for taking in feed, which must be stored in

another building. The windows of this shed should be hung on center pivots to permit entrance of air through the full size of the window. The doors used by the sheep may be made in two parts, opening outward independently. The upper half should be hinged at its top and counterbalanced by a weight connected to it by a light wire cable passing through a pulley at the side of the shed and another on the eave. A stay rod is needed to hold the door firmly when it is partly open. The doors, windows, and roof ventilator always will furnish good ventilation if properly adjusted.

This shed affords good protection for sheep under any conditions and may be used for winter lambing if it is made 20 feet wide instead

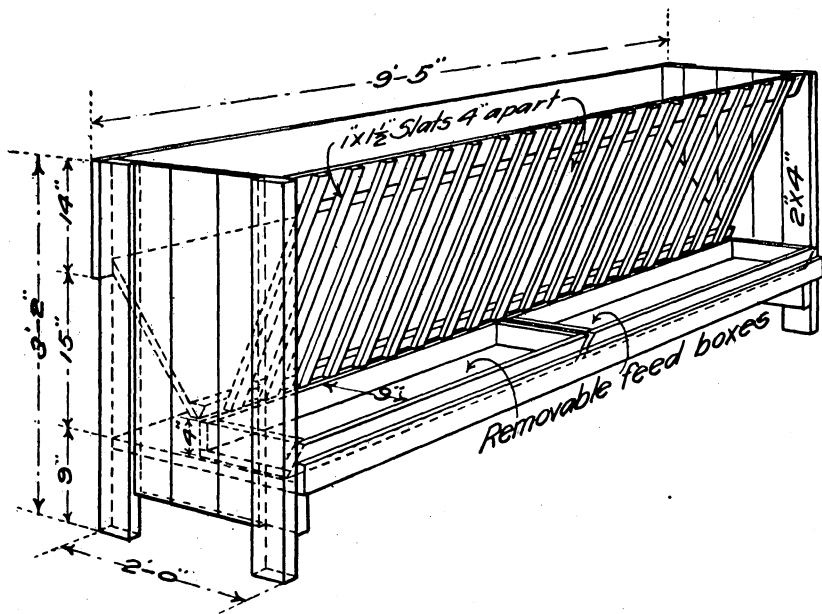


FIG. 19.—Combination hay and grain rack, with grain troughs so constructed that they may be pulled to back of rack and grain placed in them without entering the pen.

of 16, so that as many detachable lambing pens as are needed may be set up next the wall and still leave room at the rack for the other ewes. The estimated cost of this shed is \$140.

AN OPEN SHEEP SHED.

Figure 11 shows a shed 16 feet wide by 24 feet long, open on the south side and having feed racks of the type shown in figure 18 or figure 20 along the other three sides. This shed will shelter 30 mature sheep, allowing 12 square feet of floor space per animal.

When sheds of this type are well protected by trees they are satisfactory for mature sheep in almost any section. They do not furnish sufficient protection for winter lambing in a cold climate, but

may be used profitably for this purpose in many parts of the South. The estimated cost of this shed complete is \$90.

A FEED LOT FOR FATTENING LAMBS.

Figure 12 shows the plan of a feed lot designed to care for 400 fattening lambs. With certain modifications it is planned after the

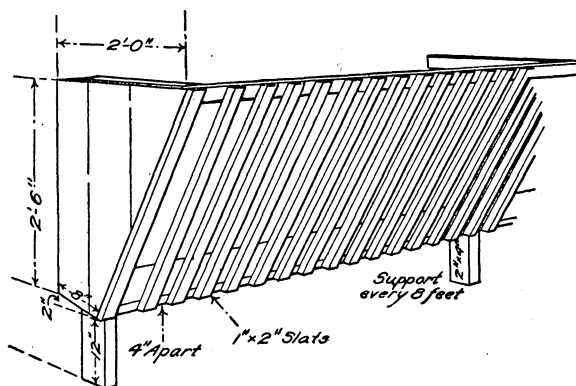


FIG. 20.—Stationary or wall rack without provision for feeding grain.

lots successfully used in Colorado and other western States. This plan provides for running the number of lambs mentioned in two pens. The panels which divide the pens also make the racks for

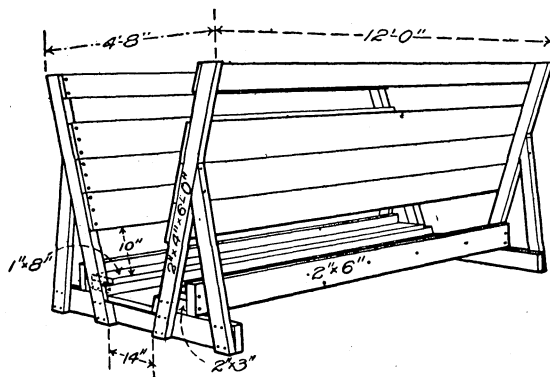


FIG. 21.—The self-feeder hay rack.

feeding hay. These panels are built as shown in figures 13 and 14. They should be made of strong material and securely attached to posts at the corners and centers.

In distributing hay to these racks, a wagon may be driven through the gates (indicated at A and B) down through the main feed racks

and out between the two sheds. Grain can also be unloaded at the grain bin direct from the wagon.

If desired the self-feeder hay rack described in figure 21 can be substituted for the "fence" rack. If this is done, the feed lot may be inclosed with a straight fence rather than the irregular panels used for feeding purposes.

A sufficient number of grain troughs is provided in the grain lot for feeding at one time all of the sheep included in one of the pens. The pivot gate shown in figure 12 is used on the same plan as a water

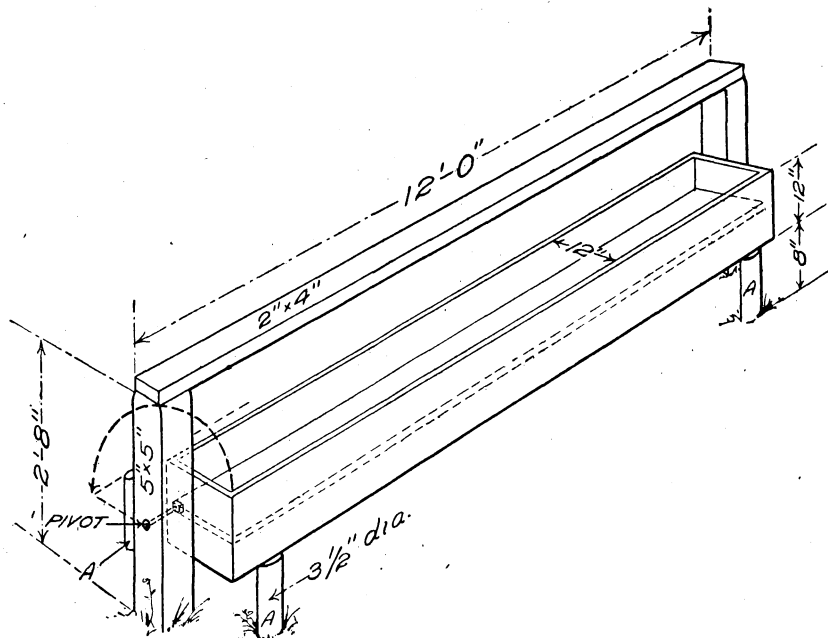


FIG. 22.—A reversible stationary grain trough.

gate. The projecting ends of the horizontal top piece are secured by strap iron at the tops of the posts supporting them. The gate is opened by means of a vertical narrow board fastened at one end and projecting above the top. After the lambs have learned to eat grain they are likely to crowd toward the grain yard. When the troughs are filled the gate is opened by swinging the bottom away from the lambs, allowing them to pass under. This opens the full width of the gate at once and avoids any trouble through the lambs crowding against the gate:

FEED RACKS.

COMBINATION HAY AND GRAIN RACKS.

Combination hay and grain racks are probably the most convenient for feeding small lots of sheep. The open-end rack shown in figure 15

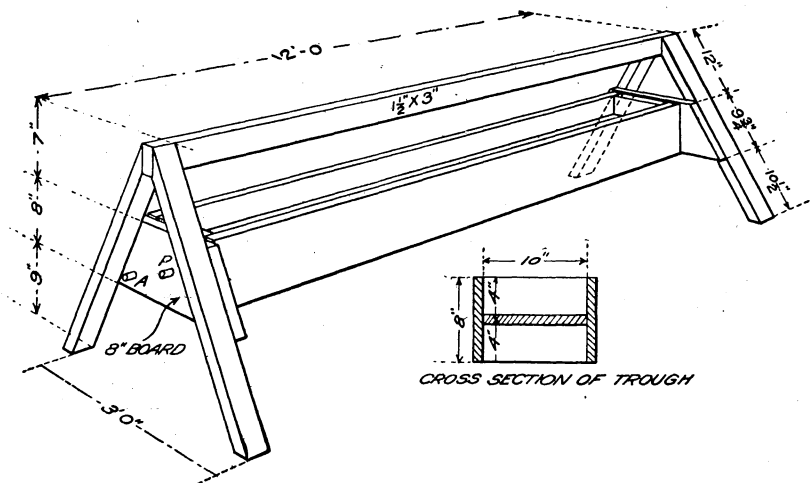


FIG. 23.—A reversible movable grain trough.

is for use in barns where feeding is done by passing directly from the alley to the rack, thus obviating the difficulties which follow from entering pens filled with sheep. Figure 16 shows a rack that is sometimes preferred in which hay and grain are fed from the same bottom. This rack, however, requires the feeding of hay and grain at different times.

The fleeces of sheep may be kept comparatively free from chaff or other feeding material by exercising care in distributing the feed.

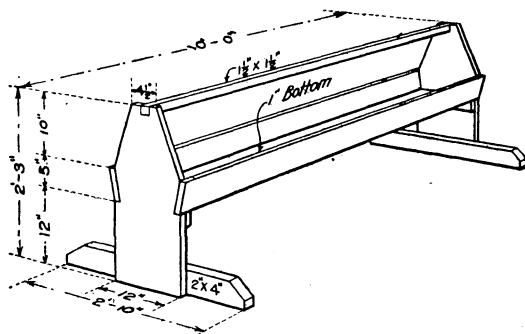


FIG. 24.—A light movable trough for feeding grain and roots.

Some shepherds prefer a rack with closed sides instead of slats; such a rack requires that the hay be eaten through an opening at the bottom as shown in figure 17.

A stationary rack which may be built against a wall or a partition (fig. 18) effects a considerable saving in floor space, but does not permit the feeding of grain without entering the sheep pen. In a

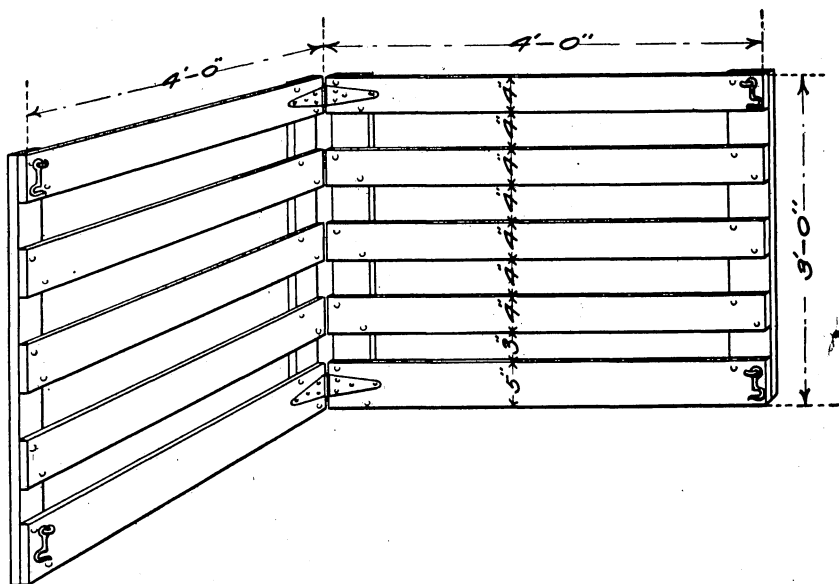


FIG. 25.—Hinged panels for temporary lambing or claiming pens.

rack such as shown in figure 19 provision can be made for sliding the grain boxes through below the hay rack and filling them from the alley outside.

HAY RACKS.

The wall rack shown in figure 20 is very useful in connection with open sheds. This rack is for hay only and may be constructed very cheaply.

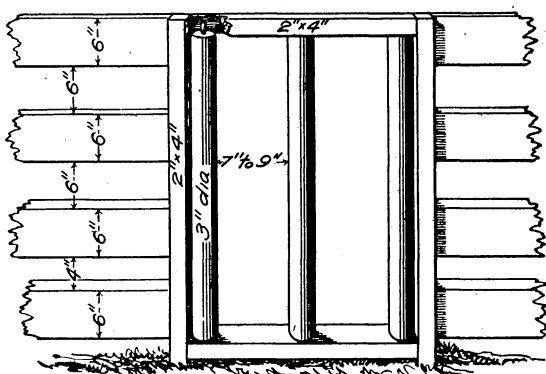


FIG. 26.—Lamb creep with rollers for uprights.

The self-feeder rack for hay shown in figure 21 is commonly used where very large numbers of sheep are fed. In building this type of rack care should be taken to insure ample width between the sides

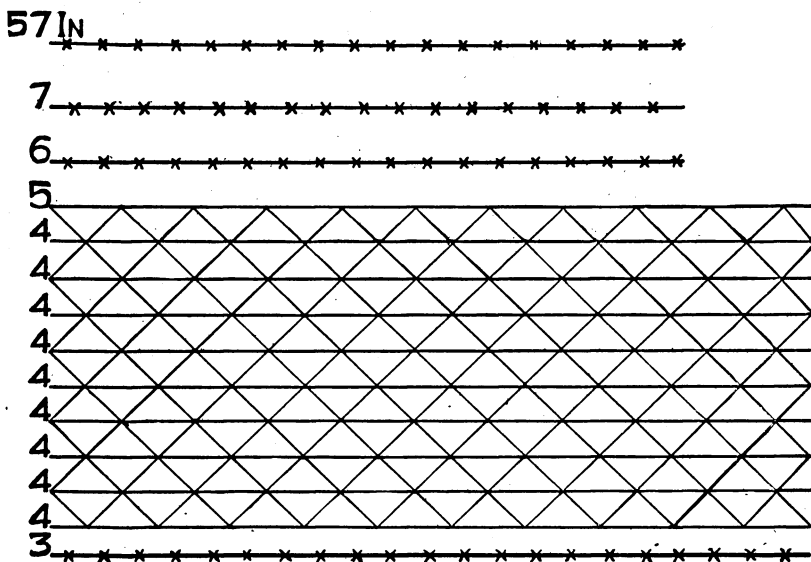


FIG. 27.—A dog-proof fence.

at the bottom and for the side openings at which the sheep feed. This will remove the necessity for keeping the hay pushed down to the lower openings.

GRAIN TROUGHS.

Figure 22 shows a stationary reversible grain trough largely used in outdoor lamb-feeding yards in the West. A single board forms the bottom for each trough. To clean the trough it is only necessary to turn it over. The posts to which this trough is attached should

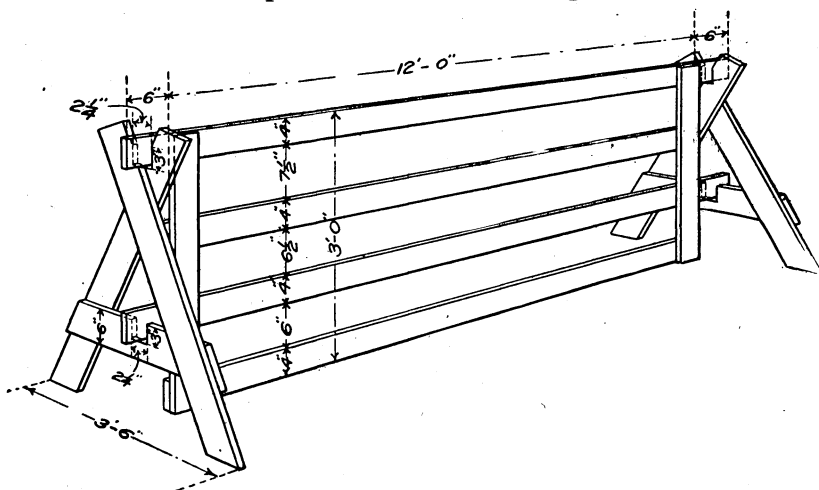


FIG. 28.—Panel and braces for making a portable sheep fence.

be firmly set to avoid being misplaced by the crowding of the sheep. The pivot upon which the trough turns is placed at the left of the center of the end piece. This brings the wide or heavier side of the trough always upon the peg placed at either side to hold it in position.

A movable trough of this type is shown in figure 23. This trough is not so readily reversed as the stationary style, as a peg must be withdrawn to permit turning the trough and afterwards inserted to keep it in position. It is useful for small lots of sheep that are to be fed outdoors.

Figure 24 shows a simpler and lighter type of grain trough. Danger of upsetting can be overcome by giving ample length to the cross footpieces.

LAMBING PENS AND CREEPS.

The detachable lambing pen previously referred to for use at lambing time is shown in figure 25. Two panels are hinged together and furnished with hooks to fasten them to the wall or to other panels. The first pen is formed by placing the pair of hinged panels at right angles to each other in a corner of the pen and fastening them to the walls.

Other pens are added as needed, one end being hooked to the corner of the last pen at one free end and to the wall at the other end. The figure shows panels for making a pen 4 by 4 feet, but a 3 by 4 foot

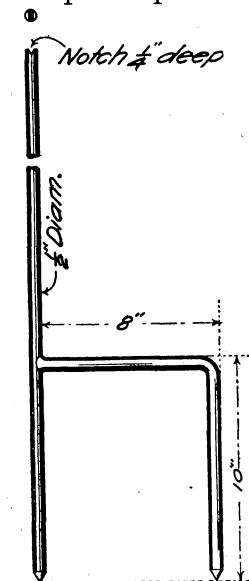


FIG. 29.—The iron stand which is successfully used at the Illinois Agricultural Experiment Station as a support for holding woven-wire fencing in constructing temporary sheep fences.

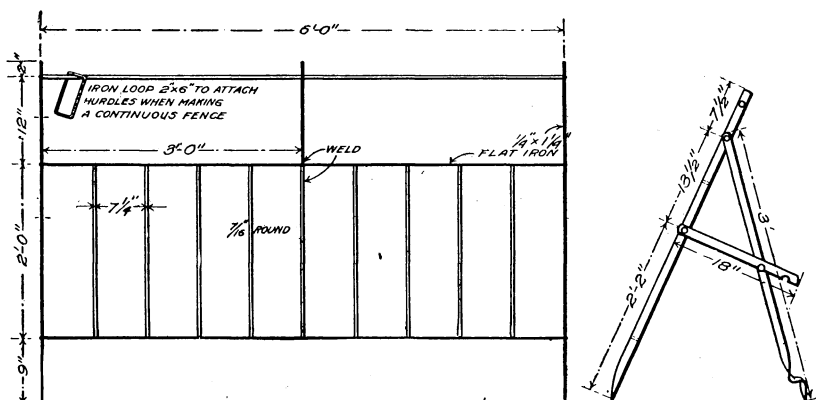


FIG. 30.—An iron hurdle used in close grazing of forage crops.

pen can be used quite satisfactorily with ewes of average size. After lambing the panels can be removed and stored until the next season.

It is usually desirable to feed grain to young lambs while they are still suckling. For this purpose a "creep" which will admit the lambs and exclude the older sheep is necessary. This may be arranged by leaving some of the lambing panels in position after having had the side facing the main pen equipped with a 12-inch opening that can be closed with a sliding board. In large flocks a special small pen can be arranged for the lambs' feed troughs. Upright slats, or preferably rollers, as shown in figure 26, placed from 9 to 12 inches apart admit the lambs.

FENCING AND HURDLES.

For inclosing sheep pastures and lots a fence that will exclude dogs should be used. A less expensive fence would suffice for the sheep themselves, though a flock may prove very troublesome if kept under a poor fence that permits them to get into adjoining fields, thus forming the habit of breaking out. The dog-proof fence shown in figure 27 is 57 inches high; the posts are $7\frac{1}{2}$ feet long, set $2\frac{1}{2}$ feet in the ground. Close to the ground is a tightly stretched barb wire, next to which is a 36-inch woven-wire fence with 4-inch mesh, and above this 3 strands of barbed wire. Where coyotes or other animals may dig under the fence the barbed wire near the ground should be placed



FIG. 31.—Illustrating the use of the iron hurdle shown in fig. 30.

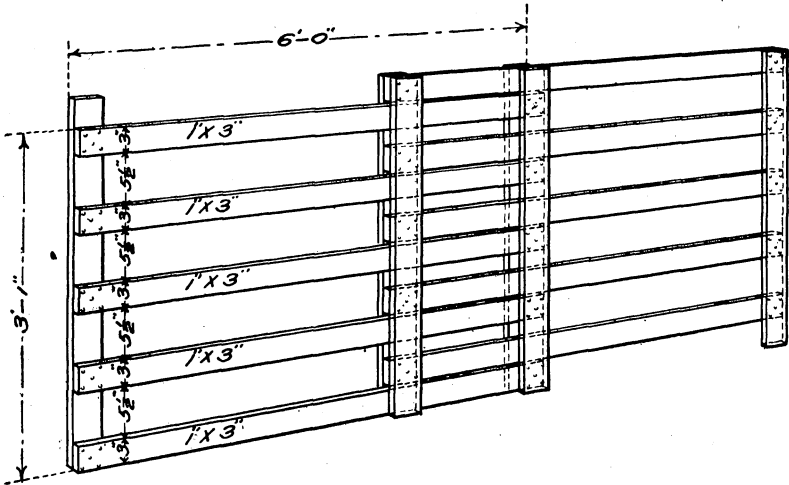


FIG. 32.—Extension hurdle. May be closed up to 6 feet 4 inches or extended to 11 feet 4 inches.

on the outside of the posts and the woven wire and higher barbed wires on the inside.

Temporary pens, lots, or small pastures can be inclosed by the portable hurdles, such as are shown in figure 28. In this hurdle the top board is notched about 4 inches from each end to fit into the

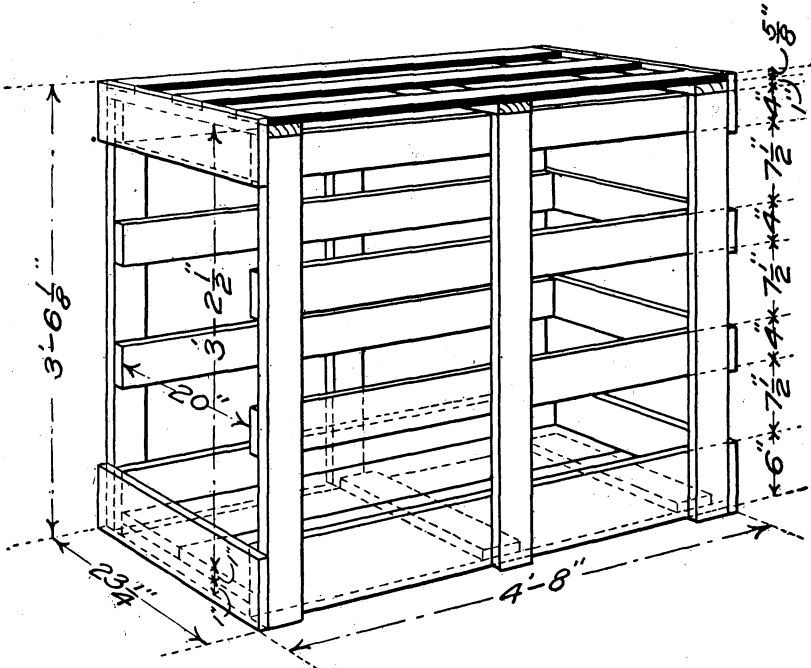


FIG. 33.—Light-weight sheep crate.

notch where the end pieces cross. Through the end of this top board a nail should be driven, otherwise the piece outside the notch will break off and cause the hurdles to work endways in their supports.

The hurdle just described can be used for fencing off parts of forage-crop pastures, though ordinarily woven-wire fencing that can be rolled up and used wherever needed is more satisfactory for field use. Woven wire used for this purpose can be stretched from permanent solid posts and supported at intervals by light sharpened posts stapled to the wire. For this purpose the iron standard shown in figure 29, which is in use at the Illinois Experiment Station, is a valuable piece of equipment. The upper end of the iron is passed through the lower wires and has a groove to hold the top wire in position. The post is set with the double foot at right angles to the direction of the fence.

Many British shepherds and a few in America use a hurdle of the type shown in figure 30 when grazing sheep upon rape or other forage. These hurdles are made of iron and permit the lambs to pass through and make use of the better grazing. They are moved forward when the older sheep have eaten all the forage behind them. One or two extension hurdles, such as the one shown in figure 32, are very useful in the sheep barn where it is desired to form a temporary pen to close an alleyway or to close a doorway without excluding

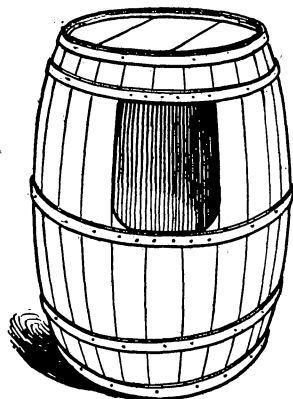


FIG. 34.—The barrel water trough.

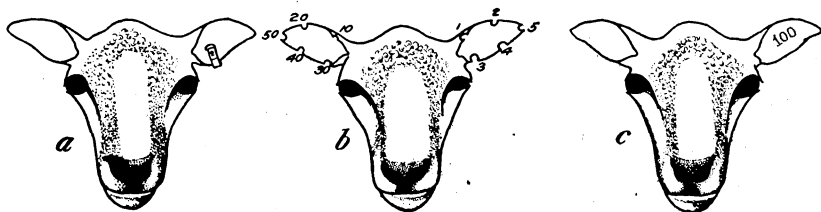


FIG. 35.—Methods of marking sheep: *a*, label; *b*, notching; *c*, tattooing.

the air. A light frame about 10 feet long with chicken wire 30 inches wide stretched over it is convenient for use in moving sheep around pens or holding a small lot in a corner of a field or pen.

MISCELLANEOUS EQUIPMENT.

DIPPING VATS.

Full descriptions of various styles of dipping vats and directions for the construction of permanent types are contained in Farmers'

Bulletin 713, obtainable from the Department of Agriculture, Washington, D. C.

SHIPPING CRATES.

The crate shown in figure 33, when made of well-seasoned pine, is amply strong and weighs only 25 pounds. Hay for feeding while in transit can be placed between the crate and a gunny sack tacked on the outside of the front end.

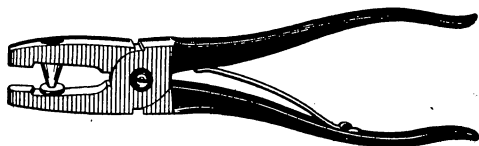


FIG. 36.—Punch used for inserting ear labels.
Can also be used for notching.

WATERING TROUGHS.

If stationary troughs of wood or concrete are used they should be easily accessible to permit frequent cleaning. On account of the comparatively small amount of water consumed by sheep in winter an open half barrel set in the pen near the door is quite satisfactory, as it can readily be removed for cleaning or when the divisions of the pens are changed. The whole barrel with the opening in the side shown in figure 34 is serviceable in pens or lots, but allows only

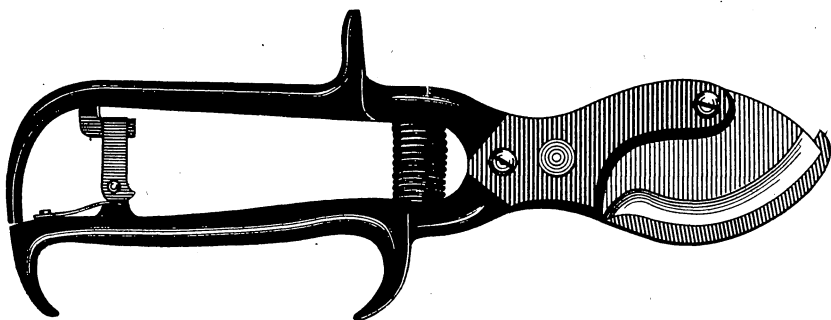


FIG. 37.—Ordinary pruning shears for trimming feet of sheep.

one sheep to drink at a time. It can be used where sheep have continuous access to it. A float valve connected with a water-supply pipe is protected in this device and the top prevents dirt or chaff from getting into the water. A removable top can be used if the barrel is to be filled by the use of a pail.

EAR LABELS AND TOE CLIPPERS.

When individual records are kept lambs must be marked soon after birth. The ordinary metal labels on the market are inserted

with the punch shown in figure 36. One of the labels in position is shown in *a*, figure 35. The same punch can be used for notching the ears to number lambs according to the plan shown in *b*, figure 35. This plan permits numbering up to 99 without requiring more than two notches in the same ear. The tattoo numbers shown in *c*, figure 35, are the surest means of numbering or identification. Special holders and metal dies for inserting these numbers are obtainable from dealers in supplies.

A pair of ordinary pruning shears such as are shown in figure 37 are used in trimming the feet when sheep are not traveling enough to keep the horn of the hoofs worn down to natural shape.

SHEARS AND SHEARING MACHINES.

Well-sharpened sheep shears should always be at hand for trimming fleeces and removing tags. For shearing the sheep in spring one of the hand-power machines on the market should be used for medium-sized flocks. For large farm flocks two machine outfits with engine power are economical, as they are not very high in price considering the speed and superiority of the machine shearing over blade or hand shearing.

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